

# Adversary Use of NBC Weapons: A Neglected Challenge

by John F. Reichart

## Key Points

**Understanding has evolved in the last decade about how an adversary might use nuclear, radiological, biological, or chemical weapons against the United States.**

**Increasingly, America is concluding that potential adversaries view these not as “weapons of last resort” but rather as tactically and strategically useful. The United States can expect their use early in a conflict as well as throughout the extended battlefield, including on U.S. territory itself.**

**States and state-supported terrorists are of primary concern, for these actors can most readily harness the full range of technical and operational capabilities needed to use nuclear, biological, and chemical (NBC) weapons in sophisticated, effective ways.**

**The U.S. military is becoming more aware of the requirements for operating in an NBC environment, but more needs to be done to ensure success.**

**Deterring NBC use may be more difficult than it was during the Cold War. New concepts and capabilities, including more sophisticated active and passive defenses, will be required. Missile defense will play an essential role.**

**A fully capable national response will require not only a better prepared military but also a better prepared public health infrastructure.**

Despite years of research, the community's knowledge of how an adversary might use nuclear (and radiological), biological, and chemical (NBC) weapons remains restricted in important ways. The historical data that inform this area are rather limited and largely dated. We do not have much in the way of adversary planning documents or doctrine to study, and nations acquiring NBC weapons do not usually address employment concepts. Despite these gaps, we do know that NBC weapons afford potential adversaries cost-effective force multipliers and that a number of states of concern are actively pursuing their development.

We know that in the 20<sup>th</sup> century NBC weapons were used in warfare. We also know that the successful use of chemical weapons by Iraq in the Iran-Iraq war, and the absence of an international outcry, led to a renewed emphasis on such programs—the Chemical Weapons Convention notwithstanding. Similarly, would-be proliferators likely have observed the relative absence of substantial punitive measures relating to flagrant Iraqi violation of international nuclear and biological weapons conventions. Moreover, it is worth remembering that we have been repeatedly surprised over the last decade by the scope of the Soviet biological weapons program, the scope and depth of Iraqi NBC efforts, North Korean missile development activities, and other high-profile cases. The unclassified judgment of the Director of Central Intelligence on this subject is clear and alarming: we face the real and growing prospect of proliferation surprise as we move into the 21<sup>st</sup> century.

Most informed observers agree that some nations are acquiring NBC capabilities with the intent of using them—whether to threaten or coerce neighbors, to deter nations from

interfering in their regions, to seek advantage in time of conflict or war, or even to punish the United States or its allies. Terrorist groups, some with state sponsorship, also have sought to achieve such capabilities. The emerging consensus of the analytic community is that we must increasingly contend with a wide range of potential adversary NBC uses. There is no guarantee, and only a low probability, that the future will resemble the past in this strategic arena.

As a consequence, it is important to think more carefully about how states and nonstate actors may actually use NBC weapons. The approach here is to examine how our thinking about adversary use has evolved in the last decade and the implications this evolution has had.

## Concepts of the Cold War

It is instructive to look back a decade and consider what U.S. experts thought about how adversaries viewed the biological and chemical weapons that they were developing and how they might employ them.

Generally speaking, many in the United States believed that the proliferation of chemical and biological weapons could be explained as a way for less developed nations to acquire what some termed the “the poor man's atomic bomb.” That is, such weapons were believed to be a seemingly inexpensive counter to the nuclear arsenals of the great powers. In a similar vein, perhaps in keeping with evolving concepts about our own nuclear weapons as the Cold War wound down, they were seen as *weapons of last resort*. The United States itself began using this term to describe nuclear weapons in statements surrounding, for instance, the evolving new

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strategic concept for the North Atlantic Treaty Organization (NATO). Moreover, they were seen as weapons that most likely would be reserved to ensure regime survival.

Even the language used to describe chemical and biological weapons reinforced these ideas. *Weapons of mass destruction* (WMD) was the term of choice. While there were some good reasons for using this phrase (and it remains popular especially in political and arms control contexts), referring to NBC weapons as WMD may have had the unintended consequence of locking many analysts and policy officials into thinking that adversaries, too, would view these weapons as useful only for *mass* destruction. The term *WMD* was also unhelpful in that it blurred the distinctive attributes of, and differences among, nuclear, biological, and chemical weapons. But the focus on mass destruction was convenient as it *did* fit in with the deterrence concepts of the time. If adversary WMD really were weapons of mass destruction and of last resort (and in these ways they were analogous to nuclear weapons), they could fit comfortably within our prevailing concept of deterrence. That is, if they were going to be used to achieve mass destruction, then clearly our threat to retaliate with nuclear weapons would be credible. Consequently, it was seen as unlikely that these weapons would be used and, if they were, that the United States would emphasize offensive, retaliatory responses rather than defensive countermeasures.

Within a few years, the undifferentiated term *WMD* evolved toward the more differentiated term *NBC*, precisely because it was obvious that these are different weapon types with a wide range of possible effects, some of which were not at all massive. Unfortunately, even the well-intentioned effort to differentiate among weapons by labeling them *nuclear*, *biological*, and *chemical* had little effect on changing our thinking about how adversaries might employ them.

The continuing mindset that linked NBC solely with mass destruction also contributed to a seldom articulated but always implied idea that defending against and operating in the face of actual use of these weapons was “too hard to do.” While thinking through the

possible use of biological weapons during the Gulf War, for instance, planners were unable to contemplate collectively and constructively either the potential magnitude of the problem or the necessary defensive responses. If biological weapons were the showstoppers that analysts suggested they could be, one might have reasonably asked whether the United States should not just seek to make its declaratory policy clearer and less ambiguous, to rely on nuclear weapons to deter, and to spend money

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on deploying “things that count” in warfighting. Indeed, many held this position.

Not only was operating in NBC environments and defending against NBC attacks considered “too hard to do,” but also, paradoxically, few perceived a clear requirement for such capabilities. That is, with particular respect to weapon effects, the evident majority view held that the *effective* application of chemical and biological weapons was simply too difficult for an adversary to achieve. A number of reasons probably accounted for this: prior U.S. discontinuation of offensive chemical and biological weapons programs; an unlearning of Cold War-era lessons too quickly in a nascent post-Soviet environment; wishful thinking that both deemphasized the threat and sought to secure a widely heralded peace dividend; and an incorrect focus on tactical forces rather than potential strategic applications of such weapons, which may also include use against rear areas, logistics and staging areas, and perhaps even noncombatants or assets outside the theater of operations.

A widespread perception also existed that a large quantity of chemical munitions was necessary to affect forces directly in the field, and these large stockpiles evidently existed only

in North Korea. Moreover, the argument continued, most biological weapons were too slow acting to have significant tactical impact. Combining these thoughts, chemical and biological weapons (CBW) were not widely considered particularly effective against forces in the field. There was a general sense that we could muddle through or, if we proved incapable of doing so in particular, limited instances (for example, at a contaminated airfield), we could always operate from a different location. In addition, despite evident and significant differences, biological warfare was often popularly equated with chemical warfare. Broadly, we operated under a legacy structure in which we organized, equipped for, and trained to operate in a chemical environment—and added the biological dimension largely as an additional duty. This approach proved inadequate. In viewing biological weapons (BW) through a chemical weapons (CW) prism, we shortchanged and deemphasized a proper understanding of the biological threat and necessary defense countermeasures.

To the extent that we thought about the implications of adversary use of NBC at the end of the Cold War, the focus was on U.S. forces. Understanding the effect on coalitions was not a priority, even in Korea, where forces ill equipped to fight in a chemical environment would be responsible for protecting the flanks of American units. When we did think of possible adversary NBC employment concepts, it was usually limited to regions far from American shores. Given the limited range of many missile delivery systems at that time, this thinking was understandable.

Our conception of adversary use of NBC weapons from the late 1980s through the early 1990s can be summarized as follows:

- While adversaries might acquire NBC weapons for various reasons, including coercion, they were less likely to *use* them against us. The key was to maintain a credible U.S. deterrent posture.

- If deterrence failed and an adversary used NBC weapons, that use would probably be reserved to defend the adversary's homeland or to ensure regime/state survival and likely would come late in a conflict. Even if use came earlier, we might have adequate warning as—our focus being primarily on chemicals—large stocks would be required to have decisive results, and we might well detect and counter such a buildup.

- Our Cold War focus on detection, avoidance, and decontamination seemed to be a sound basis for coping with chemical use. Airfields especially

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**John F. Reichart is director of the Center for Counterproliferation Research at the National Defense University. Please direct any questions or comments to Dr. Reichart at (202) 685-4200, or forward them via e-mail to [reichartj@ndu.edu](mailto:reichartj@ndu.edu).**

might be at risk, but alternative sites were usually available. Naval forces were seen as largely immune, and mobile army forces were perceived as capable of maneuvering around detected hot zones.

## Gulf War Watershed

The Gulf War had a catalytic effect on these perceptions, but it took most of a decade for a newer paradigm to emerge fully. The Gulf War began to change our thinking on potential adversary NBC uses for three principal reasons.

First, we had to consider the relationship between nuclear deterrence and adversary use of NBC weapons, and we had to think about the possibility of our own nuclear use as a potential response to NBC use by regional adversaries against us. If U.S. experts could not think of credible ways to use nuclear weapons—and the two “quick look” studies that were undertaken immediately prior to the Gulf War allegedly seemed to raise this question—why should we assume an adversary would find our nuclear deterrent threat fully credible? Nonetheless, in the months before the Gulf War, we clearly wanted Iraq to understand an implied threat to use nuclear weapons if it used chemical weapons against us. Evidence suggests that we were successful in that effort.

Second, the Gulf War made it clear to more people that CW might be used against cities, ports, or airfields—all far from the front line. The strategic value of adversary CW became apparent, even when coupled to minimal warfighting capabilities only. Taking this into account, we began to understand that CW use could affect tactical forces in a significant manner, even when not employed directly against them on the battlefield. Just the fear that CW-armed Scud missiles might be used against Israeli cities caused a major shift in defensive forces—through the deployment of limited theater missile defenses—as well as in the coalition’s offensive game plan as it diverted aircraft for the elusive Scud-hunting mission.

Third, we began to see in the aftermath of the war the vastly underestimated extent of the Iraqi BW program and the degree to which Iraq had successfully developed and weaponized biological agents. Our lack of knowledge of Iraqi BW programs and our evident inability to deal with them was the warning shot across the bow that we needed to come to grips with biological threats.

## Contemporary Views

These and other factors contributed to a slow but steady reassessment of adversary NBC use concepts. The analytic community began to explore more fully the range of emergent issues. While primary research was not possible—we could not interview key Iraqis or other proliferators and ask how they actually intended to use these weapons—defector testimony was explored, and the United Nations Special Commission uncovered additional useful information. One promising methodology was the use of “red teams” in tabletop exercises. The Center for Counterproliferation Research at the National Defense University developed an interactive game in which participants assume the role of an adversary planning

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cell and are asked to make recommendations on the use (or threatened use) of CBW in support of specified political and military objectives articulated by a hypothetical regime in possession of such assets. Since 1994, nearly 4,000 military operators and planners, logisticians, medical professionals, and civilian defense specialists have attempted to discern whether, when, and how potential adversaries might use CBW in this setting. While it would be inaccurate to suggest that potential adversaries *necessarily* think along these lines, the consistent themes emerging from these exercises are revealing—and are quite different from what had been traditional conceptions of NBC use. From these and related activities, a growing consensus on several points is evident:

- Potential adversaries may pursue chemical and biological weapons not necessarily to counter U.S. or allied nuclear weapons but to counter our *conventional* military superiority.

- NBC weapons are not just weapons of last resort. Indeed, early use, especially of BW, is not only possible but also likely. Furthermore, we are just beginning to think through how an adversary’s inclination to use CBW might be bolstered by possession of nuclear weapons. Some research suggests that the acquisition of even a small number of nuclear weapons (especially if coupled

with long-range delivery systems) by these states may make early use more likely because they may believe that their nuclear weapons can be held in reserve to deter any contemplated use of nuclear weapons by the West or to ensure regime survival and, thus, possibly avoid total defeat.

- Weapons, especially biological ones, with *lower* lethality effects can be attractive. Inflicting widespread illness (mass casualty) rather than death (mass fatality) may afford options or reduce potential consequences to an adversary, both from an operational and a political perspective. This is yet another way that we have come to understand that *nuclear is not chemical is not biological*.

- Nonetheless, all too often, BW still tends to be put in the “too hard to do” category. BW exercise play today sometimes resembles that of nuclear weapons in Cold War exercises: it can put an end to them. To avoid this, we demonstrate a repeated tendency to adhere to artificial restrictions when testing our capabilities, either by specifying less effective offensive employment conditions or delivery modes (by selecting agents that would not be show-stoppers or whose effects would not truly be felt until well after the brief exercise) or by choosing agents for which we assume (correctly or not) adequate prophylaxis—thus asserting that they will have little operational impact.

- The civilian sector has thought about and exercised its ability to respond to NBC events. But these have been exercises confined to a single city or community. Our adversaries—state and nonstate alike—may be capable of far more sophisticated, multiple, and simultaneous attacks.

- The community has also come to understand that a thinking adversary will fully use the extended battlefield, where airbases, ports, command, logistics, and other key nodes are on the front line. Indeed, the U.S. homeland is the front line. Again, we have come to appreciate this likelihood, but much of the work to date on how operations might be affected remains focused on chemical weapons. This is important work, but the biological threat may in the end be the greater one. While inadequacies remain in the way we treat biological weapons, an increasing number of analysts and policymakers have concluded that BW is radically different. To break out of the “too hard to do” BW defense box, we need to train and exercise in a more realistic manner, devise new operational concepts, and seek to field sufficient quantities of appropriate prophylactic capabilities.

- Aside from prompting us to think more about early use, research has also clearly pointed to the potentially negative effects that CBW use might have on coalition cohesion. This is a concern because host-nation civilians and coalition forces may be at risk of, yet largely unprepared for, chemical and biological weapons use and because political will may shatter in the face of a CBW threat.



## Toward a Bottom Line

In the past decade, our understanding of the NBC threat has matured. Instead of seeing CBW mainly as a threat far from our shores, we recognize it also as a threat to American and allied homelands. Instead of seeing the NBC threat emanating solely from states, we understand the threat from nonstate actors as well.

Surely, though, we can deter such use, one might object. In the end, of course, we hope we can. But we see the increased possibility that deterrence could fail in a regional context, especially if it is based primarily on the threat of retaliation. This has led to an increasing emphasis on deterrence predicated on denial capabilities, including improved counterforce and active and passive defense capabilities. Here, missile defenses have a critical role to play, as do public health resources. Among others, one important message from gaming and related activities has a good news/bad news bottom line: while adversary planning teams seriously take into account our nuclear deterrent in developing a course of action for NBC use, they almost always devise a threshold below which they believe nuclear weapons would not be used in response—and therefore are not deterred from an aggressive course of action. The logic of achieving deterrence through a combination of offense and defense becomes obvious. A key component of our defense will be a stronger, more integrated, more prepared public health establishment.

A decade ago, the NBC analytic community concluded that, with regard to deterrent forces, legacy weapons and concepts were largely sufficient. Certainly, the community was beginning to question this, but, at most, relatively minor adjustments were seen as necessary. With regard to military operations, the community assessed that while some threats (especially chemicals in select regions) were evident, these would be unlikely to materialize and, if they did, we would still be able to cope—in other words, use would not present a show-stopper. Doctrine was still based on Cold War thinking, which both called for forward-basing and contamination avoidance and downplayed potential threats to rear areas. While research, development, and acquisition activities were probably too complex to theorize adequately, the CW-oriented passive defense model held center stage, and we were not too concerned about the possibility of early use.

Today, we recognize the need to develop new deterrent concepts and tools appropriate to the task. The security community is increasingly concerned about operations and is searching both for data to understand NBC effects on future battlefields better and for improved doctrine and operational concepts for NBC environments. We have a long way to go. While the case for BW obviously can be made,

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it is perhaps equally true for emerging chemical nerve agent threats. While the defense transformation currently underway will affect counterproliferation—perhaps in ways that we cannot currently envision—U.S. strategy clearly will need to take into account both the operational and strategic effects of NBC use on coalitions and the genuine global dimension of the growing threat. Research and acquisition have a difficult task, since fielding full-spectrum capabilities is easy to request but difficult to fulfill.

## BW Terrorism Strikes

As this paper went to press, we began to see the systematic use of anthrax against citizens in the United States. It is unclear at this time whether this use is directly related to the war on terrorism. Whatever becomes known over time about the individual or group that is directing these attacks, we clearly have passed an important threshold. Indeed, whether the current attack is the action of a lone terrorist or a group connected to Osama bin Laden or is state-sponsored, this use is consistent with many of the conclusions developed over the

years in trying to understand how state adversaries might use NBC weapons against us.

These include:

- Use that happens early in a conflict, without warning, as opposed to being used as weapons of last resort
- Use of BW as a weapon of choice, not *necessarily* to kill many people (although anthrax is capable of doing that) but always as a weapon of disruption (whether the agent selected is of higher or lower lethality)
- Use that is ambiguous in terms of the character of the attack, including its objectives, its magnitude, and its origin
- Use in the United States, not just something our forces might encounter “over there”
- Use that attempts to change public perception of the risks involved in a conflict or even to disrupt coalition formation and cohesion.

It is also important to note that while we are currently fixated on the biological challenge, nations and groups that are interested in NBC weapons tend to be interested in the full range. We exclude considering the nuclear, radiological, and chemical threats at our peril. Whether used as a weapon of terror or a weapon of warfare (and the two are not necessarily mutually exclusive, but they may be of significantly different character), nuclear, radiological, biological, and chemical weapons pose unique challenges. We need to understand better how they might be used if we are to fashion effective responses.

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